

AMENDMENT TO THE CLAIMS

1. (Currently Amended) A multiband antenna comprising a multilevel structure characterized in that at least two polygons of the multilevel structure are spaced by means of a non-straight gap shaped as a space-filling curve, ~~in such a way that the whole gap length is increased yet keeping its size~~ wherein the non-straight gap increases a resonant length of the multiband antenna but does not increase an overall physical size of the multiband antenna, the overall physical size of the multiband antenna being defined by the outer dimensions of the multiband antenna.

2. (Currently Amended) A multiband antenna according to claim 1 wherein the space-filling curve approximates ~~approaches~~ a fractal shape or curve.

3. (Original) A multiband antenna according to claims 1 or 2, wherein the multilevel structure is composed by at least eight rectangles, a first rectangle being capacitively coupled to a second rectangle, said second rectangle being connected at one tip to a first tip of a third rectangle, said third rectangle being substantially orthogonal to said second rectangle, said third rectangle being connected at a second tip to a first tip of a fourth rectangle, said fourth rectangle being substantially orthogonal to said third rectangle and substantially parallel to said second rectangle, said fourth rectangle being connected at a second tip to a first tip of a fifth rectangle, said fifth rectangle being substantially orthogonal to said fourth rectangle and substantially parallel to said third rectangle, said fifth rectangle being connected at a second tip to a first tip of a sixth rectangle, said sixth rectangle being substantially orthogonal to said fifth rectangle and substantially parallel to said fourth rectangle, said sixth rectangle being connected at a second tip to a first tip of a seventh rectangle, said seventh rectangle being substantially orthogonal to

said sixth rectangle and parallel to said fifth rectangle, said seventh rectangle being connected to a first tip of an eighth rectangle, said eighth rectangle being substantially orthogonal to said seventh rectangle and substantially parallel to said sixth rectangle.

4. (Currently Amended) A multiband antenna according to claims 1 or 2, wherein the multilevel structure is composed by at least eight rectangles, a first rectangle being capacitively coupled to a second rectangle, said second rectangle being connected at one tip to a first tip of a third rectangle, said third rectangle being substantially orthogonal to said second rectangle, said third rectangle being connected at a second tip to a first tip of a fourth rectangle, said fourth rectangle being substantially orthogonal to said third rectangle and substantially parallel to said second rectangle, said fourth rectangle being connected at a second tip to a first tip of a fifth rectangle, said fifth rectangle being substantially orthogonal to said fourth rectangle and substantially parallel to said third rectangle, said fifth rectangle being connected at a second tip to a first tip of a sixth rectangle, said sixth rectangle being substantially orthogonal to said fifth rectangle and substantially parallel to said fourth rectangle, said sixth rectangle being connected at a second tip to a first tip of a seventh rectangle, said seventh rectangle being substantially orthogonal to said sixth rectangle and parallel to said fifth rectangle, said seventh rectangle being connected to a first tip of an eighth rectangle, said eighth rectangle being substantially orthogonal to said seventh rectangle and substantially parallel to said sixth rectangle, and wherein said ~~eight~~ eighth rectangle is placed between said fourth and sixth rectangles.

Claims 5-9. Cancelled.

10. (Currently Amended) A multiband antenna ~~to operate at five bands~~ according to claim 1 any of the preceding claims, wherein the multiband antenna operates at five bands, and wherein the multilevel structure is placed at one end of a rectangular ground-plane and substantially parallel to said ground-plane.

11. (Currently Amended) A multiband antenna ~~to operate at five bands~~ according to claim 1 any of the preceding claims, wherein the multiband antenna operates at five bands, and wherein the antenna is fed by means of a straight pin to a point on the second or third rectangle of said multilevel structure and wherein the antenna is matched below a $VSWR < 3$ at the frequency bands of at least one of the following five wireless services: GSM900, GMS1800, PCS1900, UMTS and 2.4GHz.

12. (Currently Amended) A multiband antenna ~~to operate at five bands~~ according to claim 1 any of the preceding claims, wherein the multiband antenna operates at five bands, and wherein the multilevel structure is placed over a Multilevel and Space-Filling Ground-Plane which includes at least two conducting surfaces, said conducting surfaces being connected by at least a conducting strip, said strip being narrower than the width of any of said two conducting surfaces.

13. (Currently Amended) A multiband antenna ~~to operate at five bands~~ according to claim 1 any of the preceding claims, wherein the multiband antenna operates at five bands, and wherein the multilevel structure is placed over a rectangular ground-plane, said ground-plane including at least one slot in at least one of its edges.

14. (Currently Amended) A multiband antenna ~~to operate at five bands~~ according to claim 1, any of the preceding claims wherein the multiband antenna operates at five bands, and wherein the antenna is placed inside a cellular phone or handheld wireless terminal.

15. (New) A multiband antenna according to claim 4, wherein the multiband antenna operates at five bands, and wherein the non-straight gap is placed between said second and fourth rectangle.

16. (New) A multiband antenna configured to operate at five bands, the multiband antenna comprising a multilevel structure characterized in that at least two polygons of the multilevel structure are spaced by means of a non-straight gap shaped as a space-filing curve and at least two polygons of the multilevel structure are quadrangles, wherein the non-straight gap increases a resonant length of the multiband antenna but does not increase an overall physical size of the multiband antenna, the overall physical size of the multiband antenna being defined by the outer dimensions of the multiband antenna.

17. (New) A multiband antenna according to claim 16, wherein the multilevel structure is composed by at least eight rectangles, a first rectangle being capacitively coupled to a second rectangle, said second rectangle being connected at one tip to a first tip of a third rectangle, said third rectangle being substantially orthogonal to said second rectangle, said third rectangle being connected at a second tip to a first tip of a fourth rectangle, said fourth rectangle being substantially orthogonal to said third rectangle and substantially parallel to said second rectangle,

said fourth rectangle being connected at a second tip to a first tip of a fifth rectangle, said fifth rectangle being substantially orthogonal to said fourth rectangle and substantially parallel to said third rectangle, said fifth rectangle being connected at a second tip to a first tip of a sixth rectangle, said sixth rectangle being substantially orthogonal to said fifth rectangle and substantially parallel to said fourth rectangle, said sixth rectangle being connected at a second tip to a first tip of a seventh rectangle, said seventh rectangle being substantially orthogonal to said sixth rectangle and parallel to said fifth rectangle, said seventh rectangle being connected to a first tip of an eighth rectangle, said eighth rectangle being substantially orthogonal to said seventh rectangle and substantially parallel to said sixth rectangle.

18. (New) A multiband antenna according to claim 17, wherein the non-straight gap is placed between said second and fourth rectangle.

19. (New) A multiband antenna according to claim 16, wherein the multiband antenna includes at least a first short-circuit and a second short-circuit between the multilevel structure and the ground-plane, a first short-circuit being connected to one edge on the tip of a first polygon of said multilevel structure and a second short-circuit being connected at one edge of a second polygon of said multilevel structure.

20. (New) A multiband antenna according to claim 16, wherein the multiband antenna includes at least a first and a second capacitive load on the multilevel structure, said capacitive load including a conducting strip, said conducting strip being connected at one edge of said

multilevel structure and being placed orthogonally to said multilevel structure between the multilevel structure and a ground-plane.

21. (New) A multiband antenna according to claim 20, wherein the multiband antenna includes at least a first capacitive load connected a tip of one of the polygons of the multiband antenna.

22. (New) A multiband antenna according to 20, wherein the multiband antenna includes at least three capacitive loads, a first capacitive load being connected at one edge of a first polygon of said multilevel structure, and a second and a third capacitive load being connected at one edge of a second polygon of said multilevel structure.

23. (New) An antenna, comprising:
a first conducting portion; and
a second conducting portion electromagnetically coupled to the first conducting portion;
the first and second conducting portions defining a non-straight gap therebetween;
wherein the non-straight gap increases a resonant length of the antenna, but does not increase the outer dimensions of the antenna.

24. (New) The antenna of claim 23, wherein the non-straight gap defines a space-filling curve.

25. (New) The antenna of claim 23, wherein the non-straight gap defines a meandering curve.

26. (New) The antenna of claim 23, wherein the non-straight gap defines a periodic curve.

27. (New) The antenna of claim 23, wherein the non-straight gap defines a branching structure having a main gap segment and at least one minor gap segment that extends from the main gap segment.

28. (New) The antenna of claim 23, wherein the non-straight gap defines a curve having between two and nine segments.

29. (New) The antenna of claim 23, wherein the first and second conducting portions are electromagnetically coupled by means of capacitive coupling.

30. (New) The antenna of claim 23, wherein the first and second conducting portions are electromagnetically coupled by means of ohmic contact.